

CLAIMS

1. A polybenzazole fiber having a strength retention (%) of 80% or more, which is determined by the equation: $(a/b) \times 100$, provided that the notations a and b are defined as follows:

the notation a indicates the strength of a yarn [cN/dtex] measured as follows: polybenzazole filaments are S-wise twisted so that the twist coefficient can be 30, to thereby make a yarn, which is then left to stand alone for 30 seconds, and the yarn is S-wise untwisted until the twist coefficient is decreased to 6, and the untwisted yarn is exposed to an atmosphere of 80°C and 80 RH% for 240 hours and taken out at room temperature to measure the strength of the yarn; and

the notation b indicates the strength of a yarn [cN/dtex] measured as follows: polybenzazole filaments are S-wise twisted so that the twist coefficient can be 30, to thereby make a yarn, which is then left to stand alone for 30 seconds, and the yarn is S-wise untwisted until the twist coefficient is decreased to 6, and the strength of the untwisted yarn is measured.

2. A polybenzazole fiber according to claim 1, wherein the average strength of a single polybenzazole fiber with an average diameter D of 5 to 22 μm and a length of 100 mm is 4.5 GPa or more.

3. A polybenzazole fiber according to claim 1, wherein the coefficient of variation CV (a standard deviation/an average value) of the diameters of a single filament, measured at 10 mm intervals over 500 mm length of the filament is 0.08 or less.

4. A polybenzazole fiber according to claim 1, wherein the stoichiometric ratio of an inorganic base to a mineral acid remaining in the fiber is 0.8 to 1.4 : 1.

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5. A polybenzazole fiber according to claim 1, which contain an organic pigment having a thermal decomposition temperature of 200°C or higher and soluble in a mineral acid.

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6. A polybenzazole fiber according to claim 5, wherein the content of the organic pigment is 2 to 8 mass %.

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7. A spun yarn comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

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8. A cord for reinforcing rubber, comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

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9. A composite material comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

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10. A woven or knitted fabric comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

11. A knife-proof material comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

12. A bullet-proof vest comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

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13. A high strength fiber rope comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.

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14. A sail cloth comprising a polybenzazole fiber according to any of claims 1 to 6, as at least one component.